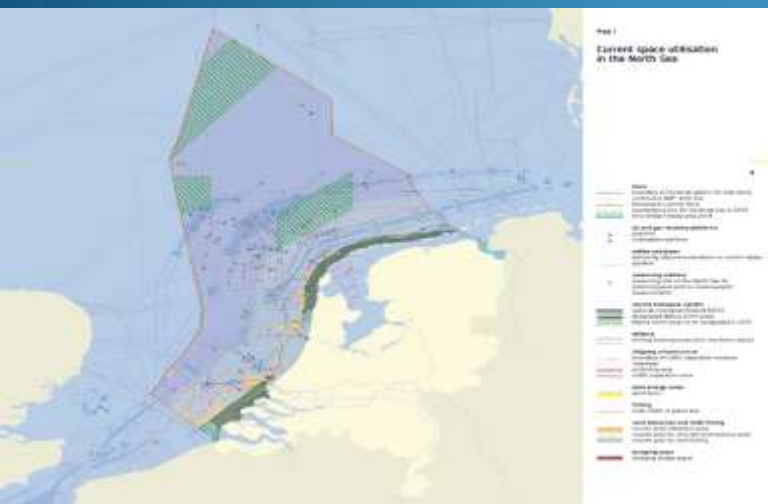


Strategic Advice for Designing and Implementing CMSP



James Sanchirico

Purpose of presentation

- To provide timely information and advice to the SAB and NOAA on ecosystem science and management research with respect to the development of coastal and marine spatial plans, noting in particular, potential gaps in data and scientific understanding.
- Terms of reference for ESMWG:

“The Ecosystem Sciences and Management Working Group (ESMWG) will provide scientific advice and broad direction to the NOAA Science Advisory Board (SAB) regarding NOAA’s ecosystem related programs, in the context of national and international activities.”

Expected outcome from presentation

- ESMWG would like to inform the SAB of its findings and research on our white paper, entitled “Strategic Advice for Designing and Implementing CMSP in the U.S.”
- **Beyond the report, the ESMWG would like to engage in a discussion with the SAB, NOAA and its partners with respect to the implementation of CMSP**

Background on white paper

- An ad hoc subcommittee of the ESMWG voluntarily took on the task of putting together the white paper
- Membership on the ad-hoc committee:
 - Jeremy Collie, University of Rhode Island (Head)
 - Vic Adamowicz, University of Alberta
 - Mike Beck, The Nature Conservancy
 - David Fluharty, University of Washington
 - Peter Karieva, The Nature Conservancy (SAB member)
 - Jake Rice, Dept. of Fisheries and Oceans Canada
 - James Sanchirico, UC Davis (SAB member)
 - James Yoder, Woods Hole Oceanographic Institute
- NOAA liasons:
 - Mark Monaco, NOS
 - Bethany Craig, NMFS
 - Beth Lumsden, NMFS
 - Mary Anne Whitcomb, OAR

Timeline

Planned timeline	Current timeline
Ad-hoc committee formed Spring 2010	
Interim findings presented at Nov. 2010 SAB meeting	
Draft final report Feb. 2011	Draft final report April 2011
Final report presentation March 2011 SAB meeting	Final report discussed on a spring 2011 SAB conference call

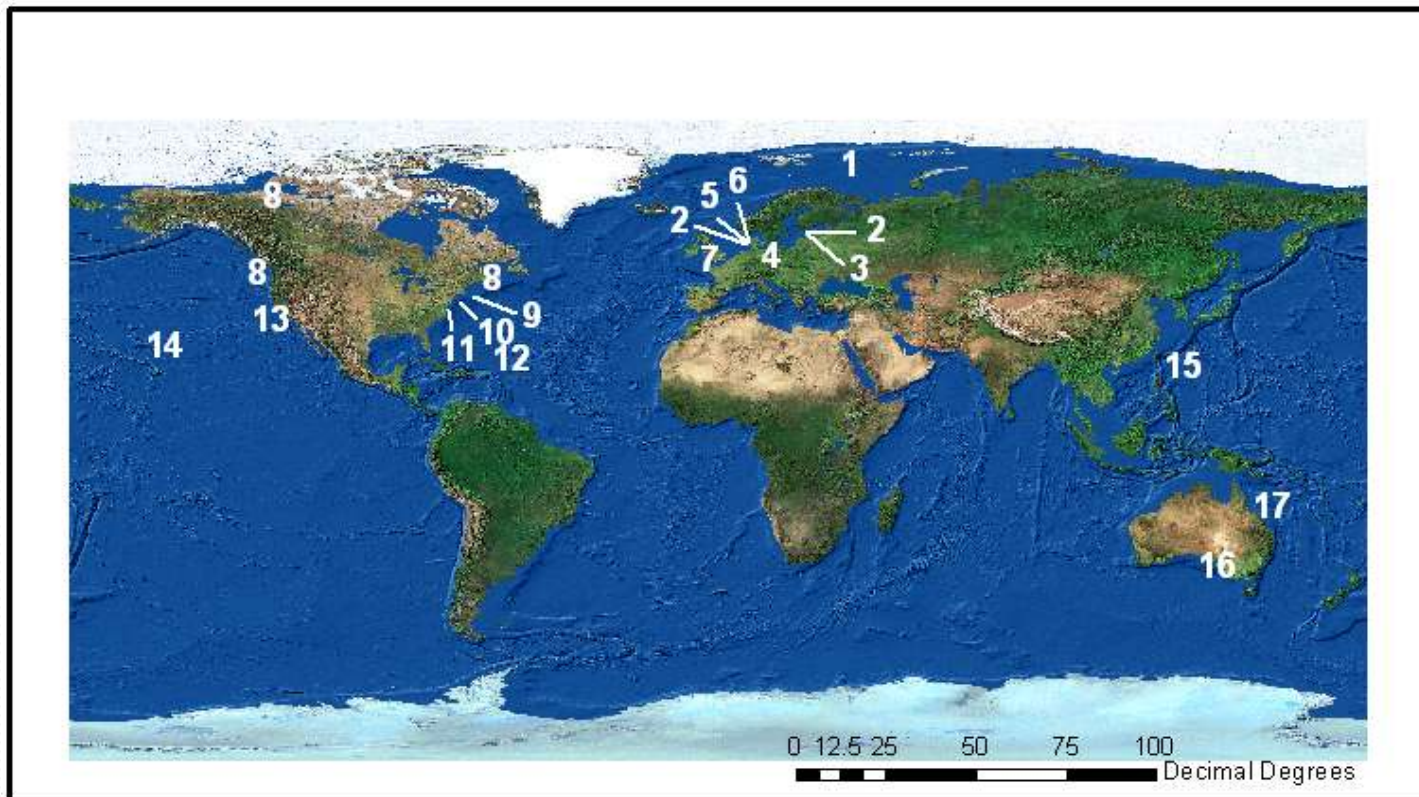
Outline

- Methods
- Findings
 - Objectives, Scope, planning process, data, participants, decision-support tools, and monitoring
- Sample of recommendations

Methods

- 17 plans were reviewed and synthesized
- Guidelines for choosing plans:
 - representative of the entire set and spanned a diverse range of scales
 - included multiple objectives
 - outcomes include spatially explicit measures
 - plan is complete and ready for implementation

Plans reviewed



- | | | |
|---|-----------------------|----------------------------|
| 1 Barents Sea, Norway | 7 Shetland Isles | 13 California MLPA |
| 2 German EEZ in the North and Baltic Seas | 8 Canada Oceans Act | 14 Hawaii ORMP |
| 3 Baltic Sea Action Plan | 9 Massachusetts OMP | 15 China MFZ |
| 4 Wadden Sea Plan | 10 Rhode Island SAMP | 16 Australia NMB |
| 5 Netherlands | 11 Maryland Oyster MP | 17 Great Barrier Reef MPZP |
| 6 Belgium Part of the North Sea | 12 St Kitts and Nevis | |

Methods (cont.)

- Each plan was described according to a set of 42 questions:
 - Objectives (3)
 - Scope (8)
 - Authority (4)
 - Data (3)
 - Participants (8)
 - Tools and decision-support (9)
 - Monitoring and performance measures (7)
- Information sources include personal experience, literature reviews of peer-reviewed and grey literature, and government reports.

Caveats

- We have focused on the process of establishing a plan rather than on trying to analyze the efficacy of any plan
 - In some cases no metrics of success were stated
 - Many plans have not been implemented or it is too early to tell how well they work
- While answers to the questions were sent when possible to leaders of the CMSP plans for verification, inconsistencies between analyst interpretations remain

Findings: Conceptual objectives

- In general, the objectives of CMSP do not differ from those of EBM, which is not surprising as CMSP has become one of the primary tools in implementing EBM
- Conceptual objectives result from formal mandates or policy

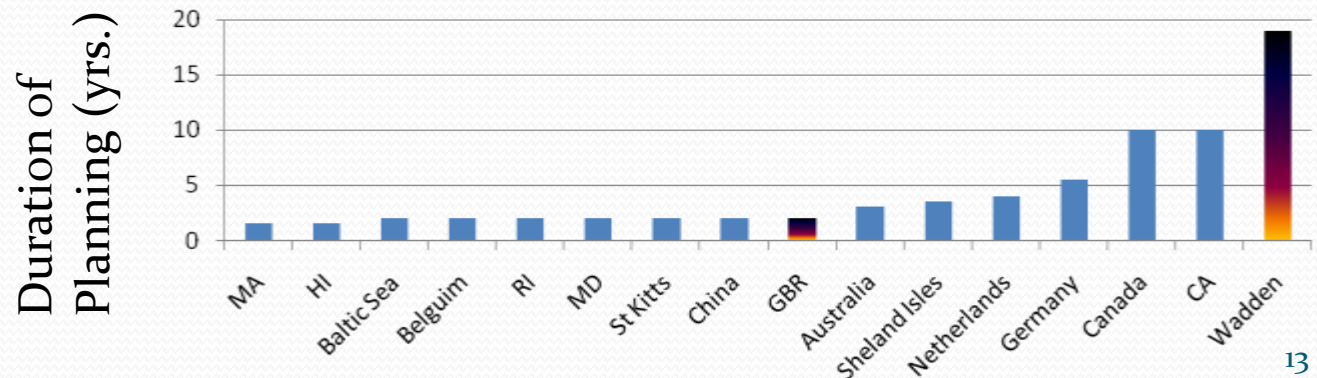


Findings: Operational objectives

- Six plans also have operational objectives varying in their specificity
 - Barents Sea “a representative network of marine protected areas will be established in Norwegian waters, at the latest by 2012”
 - Netherlands “to find space for 6000 MW of wind energy”
 - Rhode Island “to build a framework for coordinated decision-making”
- Almost an equal mixture of the operational objectives were mandated vs. being an outcome of the planning process

Findings: Scope

- Inclusion of uses
 - 13 out of 17 plans are comprehensive
 - Remaining 4 varied, e.g., the Maryland Oyster Plan is focussed exclusively on wild and cultured oysters
- Length of time to plan development
 - 1.5 years to greater than 10 years (median is 2 years)
 - Plans that were completed quickly usually had clear timelines set in legislation (MD, RI, and MA)
 - Most plans are relatively young (started after 2002)

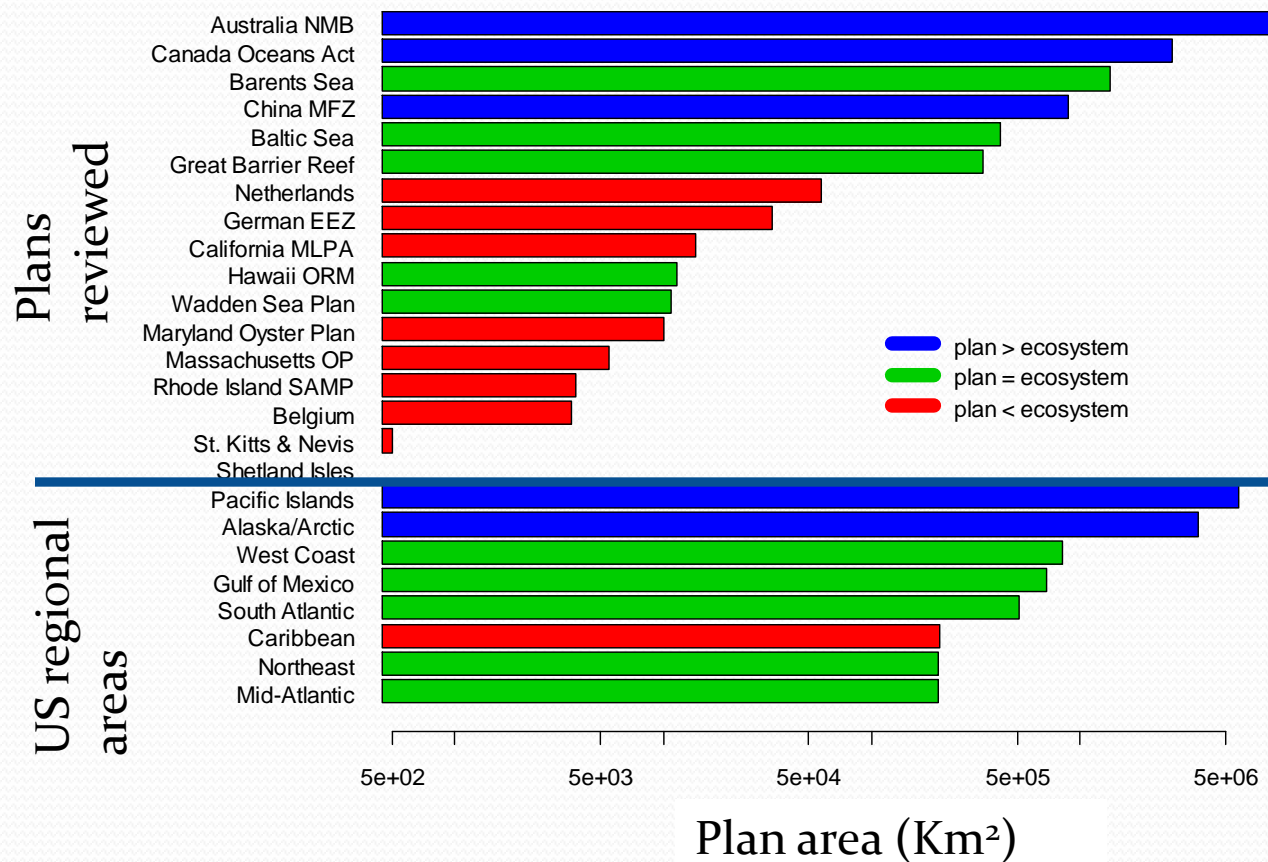


Findings: Scope

- Duration of plans
 - 6 year (Netherlands) and 10 years (Baltic Sea, Barents Sea)
 - Review of the plans at the end of the horizon can be mandated or based on whether it is deemed necessary
 - Some plans are beyond their first iteration (e.g, Great Barrier Reef, Wadden Sea)
- Spatial scale depended on plan developer
 - Nation: Entire EEZ (Canada, Netherlands, Germany, Australia)
 - State: State waters (RI, MA, CA)
 - **Exceptions**: Great Barrier Reef, Baltic Sea, Wadden Sea
 - Plans sometimes were defined at smaller regional efforts (CA)

Finding: Scope (cont.)

- Most plans are implemented at spatial scales smaller than ecosystem (red)
- US regional planning areas are near the upper end of existing marine spatial plans



Finding: Implementation of planning process

- There were few, if any, institutional changes made in governing bodies to accomplish or implement CMSP.
- The primary *modus operandi* for National plans is to call upon existing agencies to cooperate in producing CMSP plans using existing authorities.
- For State plans, authority varied from Dept. of Fish and Game (CA), State Coastal Zone Management (HI), Dept. of Natural Resources (MD)
 - Rhode Island used provisions in CZMA for spatial planning; a potential promising approach for other states

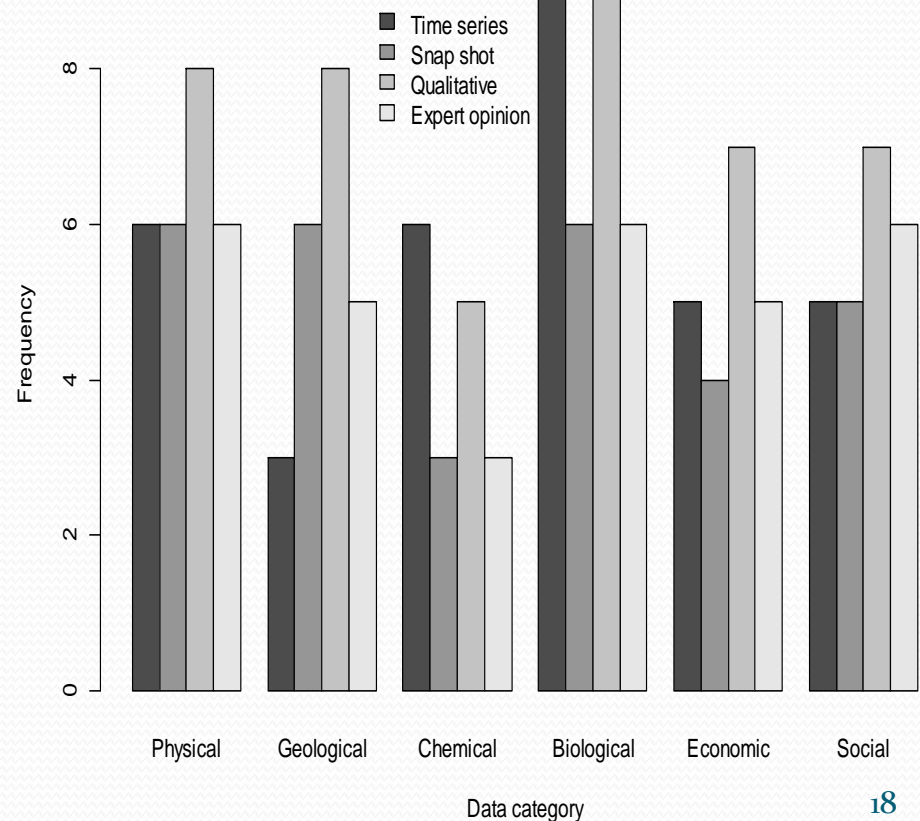
Finding: Data

- Significant variation in the use of data across the plans, data protocols, and data quality assurance
 - Understanding how decisions regarding the data were made was one of the hardest to decipher from the documentation
 - Methods for Quality Assurance on data inclusion:
 - Peer-review (RI)
 - Expert judgment (Netherlands)
 - Steering commissions (St. Kitts and Nevis)
 - Science advisory teams (CA)
 - Stakeholders were able to comment on data applicability (Netherlands) and encouraged to report errors (MA)

Finding: Data (cont.)

Types of Data	Form
Physical	Time Series
Geological	Snapshot
Chemical	Qualitative
Biological	Expert opinion
Economic	
Social	

Most plans used multiple types and forms of data.



Finding: Participants

- Federal and/or state government agencies were part of the planning process for all the marine spatial plans (tribal inclusion when applicable)
- The level of participation of entities outside of government varied among plans.
 - 5 of the plans included external scientific advisors as part of the planning process

Finding: Participants

- The definition of stakeholders varied from formal application and selection of a set of stakeholder groups with direct interests in spatial decisions (e.g. California) to self selection from all affected groups (e.g. GBRMP).
- In the CA MLPA, stakeholders were allowed to directly submit suggested areas for protection.
- There was participation from the broader public in 11 of the 17 plans, which took the form of public comment and written reviews.

Finding: Decision-support tools

- Formal decision support tools that quantify trade-offs across the **full range** of uses have not been widely used in planning efforts.
- Formal tools were used in some cases, however.
 - The California Marine Life Protection Act used tools such as MarineMap extensively.
 - Benefit-cost analysis was performed for the allocation of space to a subset of uses (Netherlands)

Finding: Decision-support tools

- Economic impacts are often measured
 - Potential jobs created or lost
 - Change in fish catch
- Most plans acknowledge uncertainty in predicting the societal impacts but did not formally address it in the decision-making process
- Ecosystem services are frequently discussed but are rarely explicitly assessed or valued
- Most planning efforts use a mix of quantitative and qualitative data and tools

Finding: Tools and decision-support

Spatial Plan	Benefit-Cost Analysis	Cost Effectiveness Analysis	Econ. Impact Analysis	Stakeholder Evaluation	Informal Expert Judgment
Barents Sea, Norway			X	X	
Baltic Sea Action Plan	Future plans		X	X	
Wadden Sea Plan					X
Netherlands	X	X	X	X	X
Canada Oceans Act					
Massachusetts			X		
Rhode Island SAMP			X	X	
Maryland Oyster Plan			X		
St. Kitts and Nevis		X		X	X
California MLPA			X	X	X
China					
NMB of Australia					
Great Barrier Reef	X	X	X	X	X

Note: Stakeholder evaluation can be an informal method of undertaking a trade-off analysis, where the weights on the different benefits/costs are “determined” in the process.

Finding: Monitoring and performance measures

- Twelve plans incorporate some level of monitoring
 - Some take advantage of ongoing monitoring programs to inform spatial planning (e.g. German EEZ)
 - Others have instigated and committed to ongoing monitoring as part of the spatial plan (e.g. Wadden Sea, CA)
 - In other cases monitoring was initiated to develop the plan but there is no commitment to continue monitoring once the plan is adopted (e.g. RI)

Finding: Monitoring and performance measures

- Little evidence that there will be monitoring to assess whether the plan succeeded in meeting the objectives
 - In some cases the legal adoption of the plan is the indicator of success
 - In others success is defined as meeting the objectives and targets
- Adaptive management is often stated as an explicit component of the plans
 - Means to implement it are during the re-assessment of the plans (defined by the planning window)

Sample of recommendations (preliminary)

- *NOAA should consider initial planning efforts at scales smaller than Large Marine Ecosystems and scopes smaller than all potential users, but do so in a manner that considers the broader ecosystem and user context.*
- *NOAA should create/support national or regional-scale science advisory bodies, with clearly defined roles, to develop technical criteria for data inclusion and to adjudicate technical issues that arise during regional CMSP processes.*
 - *E.g., Science advisory panel should have input on the planning scale and scope in each of the regions.*

Sample of recommendations (preliminary)

- *NOAA should identify in advance stakeholder roles and responsibilities, if extensive stakeholder engagement is intended.*
- *NOAA should consider the development of CMSP as an iterative process where additional data compilation, analysis, and scope of the uses considered could grow over time*
 - *Some guidance on the nature of iterative process is needed, however. Otherwise, plans could get bogged down in data collection and stakeholder processes.*

Moving forward

- **The ESMWG would like to engage in a discussion with the SAB, NOAA and its partners with respect to the implementation of CMSP.**

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EXTRA SLIDES